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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,352	11/26/2003	Shigemi Shimizu	018842.1280	6139

24735 7590 11/24/2006

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EXAMINER

HAMO, PATRICK

ART UNIT	PAPER NUMBER
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3746

DATE MAILED: 11/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/721,352

Applicant(s)

SHIMIZU ET AL.

Examiner

Patrick Hamo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>26 November 03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: reference character 24 is applied to a "holding portion" on page 4, line 16 and to a "guide rod" on page 4, lines 18 and 20, whereas the "guide rod" is referenced as 25 on page 4, line 17. It is unclear which reference 24 is correct and what element 25 references.

Appropriate correction is required.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters 26 and 36 have both been used to designate the valve retainer. Reference character 26 is applied to a clamping portion of the wobble plate on page 4, line 20, though there is no reference of this in the drawings. Instead, in figure 4, reference character 26 is applied to what is disclosed as the valve retainer, which is referenced by character 36 in all other instances. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto et al., 5,848,882 in view of Hirose et al., 6767193.

Hashimoto discloses a valved discharge mechanism of a fluid displacement apparatus including a valve plate 25 with a discharge hole 252 communicating with a cylinder 70 (see figure 3); a flat, flexible discharge valve 181 fixed to the valve plate by bolt 82 on one end and movable in a direction parallel to the valve plate at the other end (see figure 4), the movable end facing the exit of discharge hole 252; a valve retainer 180 having a curved portion 180b corresponding to the movable portion (see figure 4) and used to limit the movement of the movable portion (column 4, lines 30-33), a flat surface 180a of the valve retainer overlapping the fixed portion 181a of the discharge valve.

Hashimoto does not disclose that the curved surface of the valve retainer is different in radius of curvature in a second direction parallel to the valve plate and perpendicular to a first direction parallel to the valve plate as defined by the direction in which the movable portion of the discharge valve extends from the fixed portion; the radius of curvature gradually and smoothly varying to have a maximum at a first end and a minimum at a second end of the curved surface, defining a minimum and

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maximum movable range of the valve, respectively; a ratio between minimum and maximum movable ranges designed between 1.5 and 3.0; and the curved surface having a part along a conical shape.

However, Hirose teaches a reed valve element 35 that is designed to twist upon the sucking of a refrigerant into a piston bore (column 6, lines 17-18) The twisting of the reed valve element results in different radii of curvature along the element, gradually and smoothly varying from a minimum at the right end and a maximum at the left end as seen in figure 6B, the left end and right end defining maximum and minimum deflections of the valve, respectively (figure 6A, 6B). Because the profile shape is continuously curved, it is obvious that it can be fitted to a conic section. Hirose's reed valve element design improves the opening operation of the valve element and reduces pressure loss caused by the operation of the valve element (column 6, lines 24-30).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified Hashimoto with Hirose by modifying Hashimoto's valve retainer structure to fit the valve reed element taught by Hirose to improve the opening operation of the valve element and reduce pressure loss (column 6, lines 24-30).

In regards to the claimed limitation of a ratio between minimum and maximum movable ranges between 1.5 and 3.0, it is not inventive to discover the optimum or workable ranges by routine experimentation where the general conditions of a claim are disclosed in the prior art. Therefore, this limitation is deemed unpatentable. See MPEP § 2144.05(2)(a).

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Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Hamo whose telephone number is 571-272-3492. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg can be reached on 571-272-4828. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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**EHUD GARTENBERG
SUPERVISORY PATENT EXAMINER**